Project AIR FORCE

# MEASURING CHANGES IN SERVICE COSTS TO MEET THE REQUIREMENTS OF THE 2002 NATIONAL DEFENSE AUTHORIZATION ACT

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# PREFACE

Requirements in the 2002 National Defense Authorization Act set goals for the Department of Defense (DoD) to achieve savings in service contract expenditures over a ten-year period. This report discusses the complexities of, and recommends a methodology for, measuring changes in service costs incurred by the military. The research is a product of the study, "Supporting the Warfighter Through Improved Service Contracts," sponsored by the Deputy Assistant Secretary for Contracting (SAF/AQC) and conducted within the Resource Management Program of RAND Project AIR FORCE.

For almost a decade, the RAND Corporation has been helping the Department of Defense improve the way it purchases goods and services. Readers may also be interested in selected related studies:

- *Defining Needs and Managing Performance of Installation Support Contracts: Perspectives from the Commercial Sector,* Laura H. Baldwin and Sarah Hunter, RAND Corporation, MR-1812-AF, forthcoming
- *Implementing Performance-Based Services Acquisition (PBSA): Perspectives from an Air Logistics Center and a Product Center*, John Ausink, Laura H. Baldwin, Sarah Hunter, and Chad Shirley, RAND Corporation, DB-388-AF, 2002, which can be downloaded from www.rand.org/publications/DB/DB388
- *Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms*, Nancy Y. Moore, Laura H. Baldwin, Frank Camm, and Cynthia R. Cook,

RAND Corporation, DB-334-AF, 2002, which can be downloaded from www.rand.org/publications/DB/DB334

- *Federal Contract Bundling: A Framework for Making and Justifying Decisions for Purchased Services*, Laura H. Baldwin, Frank Camm, and Nancy Y. Moore, RAND Corporation, MR-1224-AF, 2001, which can be downloaded from www.rand.org/publications/MR/MR1224
- *Performance-Based Contracting in the Air Force: A Report on Experiences in the Field*, John Ausink, Frank Camm, and Charles Cannon, RAND Corporation, DB-342-AF, 2001, which can be downloaded from www.rand.org/publications/DB/DB342
- *Strategic Sourcing: Measuring and Managing Performance*, Laura H. Baldwin, Frank Camm, and Nancy Y. Moore, RAND Corporation, DB-287-AF, 2000, which can be downloaded from www.rand.org/ publications/DB/DB287
- *Incentives to Undertake Sourcing Studies in the Air Force*, Laura H. Baldwin, Frank Camm, Edward G. Keating, and Ellen M. Pint, RAND Corporation, DB-240-AF, 1998
- Strategic Sourcing: *Theory and Evidence from Economics and Business Management,* Ellen M. Pint and Laura H. Baldwin, RAND Corporation, MR-865-AF, 1997.

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# SUMMARY

The National Defense Authorization Act for Fiscal Year 2002 sets forth a series of goals for the Department of Defense to reduce the cost of the services it buys over a ten-year period through changes in contracting practices and improvements in management techniques. This study investigates ways to measure whether the Air Force is achieving these cost-reduction goals and discusses the most important steps in the measurement process.

Successfully estimating changes in service costs over time first requires establishing a baseline, i.e., expenditures that occurred in the base year, for a clear universe of services that permits a consistent comparison of service purchases over time. The second step in the process is to estimate the expenditures on these services for the current fiscal year. A fundamental part of constructing the current-year expenditures is to control for any changes in the nature of services purchased over time, including changes in the scope of services, and, to the extent possible, changes in quantity and quality. The next step is to apply an appropriate measure of inflation to the baseline expenditures to estimate what those services would have cost in the current year in the absence of changes in contracting practices and management techniques. After the baseline, current year, and without-management-change costs have been estimated, the final step is to calculate the savings achieved and compare them with the goals.

Reporting requirements of the Act necessitate that the savings measurements not only include historical expenditures but that they also

forecast *future* expenditures.[1] In fact, what is most difficult about satisfying the requirements of the Act is that *forecasted* expenditures are more important than historical expenditures: the final report required by the Act in March 2006 is supposed to estimate savings five years into the future, but it need not address whether the savings goals of earlier fiscal years were achieved.

Existing data sources offer either a detailed accounting of past service purchases or a more general forecast of future purchases, but no single source is sufficient for the entire task without further work or linkage.

Table S.1 presents each element of the legislative requirement, the potential source(s) of data to meet the requirement, and summarizes our recommendations on how best to implement each element.

While this research recognizes the difficulties inherent in systematically tracking and analyzing the effects of changes in practices on service costs, it highlights a general need for improvements in Air Force data collection and processing to better provide such capability. Other RAND research is exploring the adequacy of the DD350 data to identify a stable set of services over time and robustly characterize the Air Force's service expenditures.

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[1]The annual report requires not only an estimate of savings in the current year that resulted from new management practices but also an estimate of savings for the *next* year deriving from new management practices.

**Table S.1**

**Summary of Reporting Requirements and Recommendations**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 1. Establish FY00 cost savings baseline for procurement of services. | DD350 | A. Clearly define the universe of services governed by the Act; choose a set of services for which PBSA[a] and other management innovations are appropriate.<br>B. Sum FY00 expenditures for chosen services.<br>(See p. 7) |
| 2. Estimate the amount that will be expended for procurement of services in the current FY. | DD350<br>ABIDES[b] | A. Adjust for changes in scope.<br>B. Where possible, adjust for changes in the quantity of services purchased.<br>C. Assume that the quality remains constant instead of attempting to adjust prices for quality changes.<br>(See p. 10) |
| 3. Estimate the amount that will be expended for procurement of services in the following FY.[c] | ABIDES | A. Establish a link between PSC/NAICS[d] codes in DD350 and EEIC[e] codes in ABIDES.<br>B. Use most current forecast for next FY expenditures for chosen services, adjusted as described above.<br>(See p. 16) |
| 4. Establish the "hypothetical" expenditures for the current and following FYs (the amount that "otherwise would have been spent"). | DD350<br>OSD O&M[f] Price Index<br>BLS[g] National Service Wage Index | A. Establish the hypothetical cost for the current year by adjusting the base year expenditures to current year dollars through the chosen inflation index.<br>B. Do the same for the following FY.<br>(See p. 18) |

**Table S.1—continued**

| | | |
|---|---|---|
| 5. Estimate the amount of savings in the current FY and following FY that result from improved management practices. | | A. Subtract expected expenditures for the current FY from the hypothetical for the current FY.<br>B. Do the same for the following FY.<br>(See p. 21) |

[a] Performance-Based Services Acquisition.
[b] Automatic Budget Interactive Data Environment System.
[c] For the final report, the forecast is for five years into the future.
[d] Product Service Code/North American Industry Classification System.
[e] Element of Expense/Investment Code.
[f] Office of the Secretary of Defense Operation and Maintenance.
[g] Bureau of Labor Statistics.

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We also wish to thank our RAND colleagues: Gary Massey and Jack Graser for their assistance with understanding ABIDES; Bob Roll for his insights on the PPBS process and for encouraging us to broaden the methodology to include unstable services; and participants in the Payday seminar series.

Finally, we thank our RAND colleague Lloyd Dixon and Chip Franck of the Naval Postgraduate School for their helpful reviews of an early draft of this report.

# ACRONYMS

| | |
|---|---|
| A&AS | Advisory and Assistance Services |
| ABES | Amended Budget Estimation Submission |
| ABIDES | Automatic Budget Interactive Data Environment System |
| APB | Amended President's Budget |
| BES | Budget Estimation Submission |
| BLS | Bureau of Labor Statistics |
| CFR | Code of Federal Regulations |
| DD350 | Department of Defense Form 350 |
| DEPPS | Defense Employment and Purchase Projection System |
| DoD | Department of Defense |
| DRU | Direct Reporting Unit |
| EEIC | Element of Expense/Investment Code |
| F&FP | Force and Financial Plan |
| FOA | Forward Operating Agency |
| FY | Fiscal Year |
| FYDP | Future Years Defense Program |
| FAR | Federal Acquisition Regulations |
| GAO | General Accounting Office |
| GDP | Gross Domestic Product |
| IPT | Integrated Process Team |

| | |
|---|---|
| MAJCOM | Major Command |
| NAICS | North American Industry Classification System |
| O&M | Operation and Maintenance |
| OSD | Office of the Secretary of Defense |
| PB | President's Budget |
| PBSA | Performance-Based Services Acquisition |
| PPBS | Planning, Programming, and Budgeting System |
| POM | Program Objective Memorandum |
| PSC | Product Service Code |
| SCA | Service Contract Act |

Chapter One

# INTRODUCTION

Federal agencies purchase a wide range of goods and services each year. During the 1990s, services became an increasingly important spending category. In fiscal year (FY) 2000, the federal government spent more than $87B on services, representing 24 percent growth (in constant dollars) from FY90. Services currently represent the largest category of government purchases. The Department of Defense (DoD) spends more on services than any other federal agency, in excess of $53B in FY00.[1]

The DoD has long sought to ensure that its appropriations are used as effectively and efficiently as possible. Acquisition reform—encompassing a wide range of changes to procurement regulations, policies, and practices—first focused in the 1990s on the purchase of weapon systems and other hardware. However, as services have grown in budgetary importance, acquisition reform for service purchases has become a priority.

One tenet of services acquisition reform is the use of performance-based contracts. Part 37 of the Federal Acquisition Regulations (FAR) defines four requirements of a performance-based service contract: (1) tell the contractor *what* is needed, rather than *how* to provide the service; (2) establish measurable performance standards and a quality assurance plan to determine whether the service meets the contract requirements; (3) reduce fee or price when the service does not meet those requirements (negative incentives); and (4) use performance (positive) incentives where appropriate. The combination of

[1]For more details, see GAO (2001, 2002) and Davis (2001).

an outcome orientation and focus on incentives is meant to promote service innovation and reduce costs.

Performance-based service contracts gained attention in the federal government in the early 1990s (OFPP, 1991). The Air Force issued an instruction for implementing performance-based service contracts in 1999 (U.S. Air Force, 1999). In April 2000, Dr. Jacques Gansler, the Under Secretary of Defense for Acquisition and Technology, established a goal that a minimum of 50 percent of DoD service acquisitions, measured in both dollars and contracts, be performance-based by the year 2005 (Gansler, 2000). The Office of Management and Budget affirmed the use of performance-based contracts across the federal government in a March 2001 memorandum by establishing an interim goal that 20 percent of FY02 federal service contract dollars be awarded through performance-based contracts (O'Keefe, 2001). Most recently, the National Defense Authorization Act for Fiscal Year 2002 prohibits the use of service contracts in the DoD that are not performance-based without prior approval.[2]

Unfortunately, fundamental changes in practices rarely happen simply as a result of a policy change. A number of case studies of DoD and other federal agencies' recent services acquisition activities have revealed problems with service contract management, as agencies struggle with acquisition planning, defining requirements, evaluating prices, and managing contractor performance. These problems led the General Accounting Office (GAO) to designate contract management as a "high-risk" area for the DoD and the Department of Energy, the next largest purchaser within the federal government (GAO, 2001).

To encourage the DoD to fundamentally change the way it approaches its services acquisition activities, the National Defense Authorization Act for Fiscal Year 2002 (hereafter "the Act") includes a requirement to demonstrate ten percent savings in service contract costs (relative to a baseline of FY00 costs) by FY11 through use of

[2]However, the definition of "performance-based" in the Act is different from the one in FAR Part 37. The Act specifies that a performance-based contract "includes the use of performance work statements that set forth contract requirements in clear, specific, and objective terms with measurable outcomes." See Section 801.2330a.

performance-based service contracts, increased competition, and management innovations.

> [T]he Department of Defense shall have goals to use improved management practices to achieve, over 10 fiscal years, reductions in the total amount that would otherwise be expended by the Department for the procurement of services (other than military construction) in a fiscal year by the amount equal to 10 percent of the total amount of the expenditures of the Department for fiscal year 2000 for procurement of services (other than military construction), as follows:
>
> A. By fiscal year 2002, a three percent reduction.
>
> B. By fiscal year 2003, a four percent reduction.
>
> C. By fiscal year 2004, a five percent reduction.
>
> D. By fiscal year 2011, a ten percent reduction. [3]

The DoD must also report estimates of savings to Congress annually through 2005, including, at a minimum, the following information: [4]

- A summary of steps taken or planned to be taken in the fiscal year of the report to improve management of procurement of services.
- A summary of such steps planned for the *following* fiscal year.
- An estimate of the amount DoD will spend on the procurement of services in the fiscal year of the report.
- An estimate of these expenditures for the *following* fiscal year.
- An estimate of the amount of savings that will be achieved as a result of improved management practices, both in the fiscal year of the report and in the following fiscal year.

The first report was due March 1, 2002, but DoD was unable to meet the deadline. The final report is due March 1, 2006—even though the

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[3] See the National Defense Authorization Act for Fiscal Year 2002, Section 802, "Savings Goals for Procurements of Services."

[4] Section 802(b) paraphrased; emphasis added.

goals for reductions in expenditures extend through 2011.[5] Each report must include both realized savings to date and an estimate of future year savings.[6] The final report forecasts these savings out five years.

Measuring these changes in services acquisition costs over time both accurately and fairly is a difficult task, and is made even more complicated by the need to project estimates into the future to meet the reporting requirements. In Table 1.1 we break down the process of estimating the savings into a series of steps.

The first step is to define the set of services for which costs will be measured over time and calculate the cost savings baseline, the amount spent on those services in FY00. This baseline determines the cost reduction goal. The second step is to determine the amount spent on the set of services in the current year (i.e., costs "with management improvements"), and the third (because of reporting requirements of the Act) is to estimate the amount to be spent in the following year. The second and third steps will require a methodology to control for changes in the services purchased over time. The fourth step is to estimate the amounts that would have been spent in

**Table 1.1**

**Steps to Estimate Service Cost Savings**

| | |
|---|---|
| 1. | Establish FY00 cost savings baseline for procurement of services. |
| 2. | Estimate the amount that will be expended with management improvements for procurement of services in the current FY. |
| 3. | Estimate the amount that will be expended with management improvements for procurement of services in the following FY. |
| 4. | Estimate expenditures without management improvements for the current and following FYs (the amount that "would otherwise be expended"). |
| 5. | Estimate the amount of savings in the current FY and following FY that result from improved management practices. Compare with cost savings goal. |

[5]Note that there is no requirement to report on whether goals in previous years were actually achieved, nor is there any sanction for failure to achieve any of the goals.

[6]The estimated savings for the *following* year is probably meant to provide an early indication of progress toward meeting the following year's savings goals.

the current year and in the following year in the absence of any improvements in the management of services procurement activities (i.e., costs "without management improvements"). This step will require the development of an acceptable estimation approach. The fifth and final step is to compare the amounts without management improvements with the current year and future year expenditures with management improvements to determine the level of savings and thus whether the cost reduction goal is met.

The purpose of this report is to support the Air Force's efforts to meet the cost reduction goals and reporting requirements established by the Act. Specifically, we outline a methodology to measure changes in service contract costs over time, and we discuss challenges associated with implementing this methodology (including finding adequate data sources) and complying with the Act's reporting requirements.

The remainder of this report is organized as follows. Chapter Two describes a methodology the Air Force can use to measure changes in service contract costs over time, following the steps outlined in Table 1.1. It discusses the need to identify a set of services relevant to the cost savings goal, i.e., which service costs should be measured over time. It examines a number of issues associated with measuring service contract expenditures with management improvements, and it explores methodologies to calculate the amount that "would otherwise be expended" for services if improved management practices had not been implemented. Data issues are discussed along the way. Chapter Three then provides a summary and a discussion of remaining issues.

Chapter Two

# METHODOLOGY TO MEASURE CHANGES IN COSTS OVER TIME

The savings calculation presented in the previous chapter raises a number of analytic questions:

- What activities are considered services for the purpose of complying with the Act?
- How should cost changes be measured over time?
- How should these cost changes be projected into the future?
- How is what "would otherwise be expended" to be determined?
- What savings are realized, and do they meet the goal?

In this chapter, we discuss issues related to each and suggest approaches that the Air Force can take to satisfy the intent of the Act.

In this research, we considered two approaches to meeting the reporting requirements of the Act. In one approach, the Air Force would consider a random sample of service contracts. To estimate the savings from each contract, the Air Force would need to explore the nature of the services purchased over time, their past and current costs, and their expected future costs. Statistical techniques would then be used to apply the results of the random sample to the entire population. A second approach is to aggregate expenditures for services and estimate savings for the populations using projections and statistical techniques.

We chose to focus on the latter approach. While collecting data on a subset of contracts initially appears more feasible, it would be ex-

tremely labor intensive to obtain data for a large enough sample to have confidence in the results. The process would also have to be repeated each year. While there are significant implementation challenges with the second approach, those challenges occur mainly in the initial year(s). Once the approach is in place, it should be relatively easy to reestimate changes in costs each year.

Specifically, we propose to measure changes in costs associated with management improvements by constructing a stream of actual expenditures for services that has been adjusted to take into account changes in service scope and some changes in service quantity. Potential changes in quality are ignored. Costs without management improvement, i.e., costs that would otherwise be expended, are determined by adjusting baseline purchases for these services by using an appropriate measure of inflation. In the detailed discussion that follows, individual tables summarize important points for each of the steps presented in Table 1.1.

## STEP 1: DEFINING THE UNIVERSE OF SERVICES

The Act does not clearly define the services to which it applies. It specifically excludes military construction from the universe of services, and presumably includes all others. But defining the universe of services is not straightforward.

Previous RAND research found inconsistencies in the definition and treatment of services among acquisition guidance documents (Ausink et al., 2002). Legislation such as the Service Contract Act (SCA), the Walsh-Healey Act, and the Code of Federal Regulations (CFR) provides differing interpretations of what constitutes a service. The CFR, for example, provides a long list of contracts that have been found to fall under the SCA, but also notes that "[t]he types of contracts, the principal purpose of which is to furnish services through the use of service employees, are too numerous and varied to permit an exhaustive listing" (29 CFR 4.130). Various pieces of legislation provide lists of services that are exempted from the SCA, but except for military construction, it is unclear which, if any, services would be excluded from reporting requirements under the Act.

Determining the universe of services for cost savings measurement is particularly complex for two reasons. Some kinds of services, such as

installation support activities, are purchased repeatedly over time, and the nature of the Air Force's demand for these services remains fairly stable. For other services, such as special engineering studies to support development or sustainment of weapon systems, the nature of the Air Force's demand changes, and the complexity and scope of the services purchased will vary. The methodology for calculating changes in service costs first captures those services for which demand is fairly stable. We then discuss ways to include the rest of the services in the calculations.

The second complicating factor is that the Act specifically mentions the use of performance-based contracts as one way to reduce service costs. Different parts of the FAR and performance-based services acquisition (PBSA) policy and guidance documents exempt different services from the requirement to use performance-based contracts (Ausink et al., 2002), so if the Act is meant to apply to services for which performance-based practices are encouraged, those services are not clearly defined. Further, the Act uses a different definition of "performance-based" than the definition found in FAR Part 37.6, adding to the uncertainty.

We recommend that a set of services to which the Act's cost reduction goals apply be clearly established based on a common understanding of the characteristics of the services and which services are deemed to be appropriate for performance-based practices and other management innovations.

## Data on Obligations: The DD350

The primary data for tracking service procurement expenditures come from the DD350 Individual Contracting Action Report forms. A DD350 form is completed for each Department of Defense contract transaction over $25,000. This form contains descriptive information such as the purchasing organization, the primary type of good or service purchased (through the principal product service code [PSC] and the North American Industry Classification System [NAICS] code), the dollar amount, and the contractor. For FY01, the DD350 data capture 95 percent of the Air Force's $42.3B in direct purchases from commercial entities (vs. intra-government purchases) (Moore et al., 2002). While we (and others) have some concerns about the accuracy of the data, including the classification of expenditures as

either services or products and the descriptions of the goods or services purchased, these data offer considerable detail about individual transactions.[1]

Other data sources, such as the DD1057 data on contract transactions of $25,000 or less and government purchase card transactions, offer far less detail on a considerably smaller portion of the Air Force's expenditures.[2] Therefore, in spite of its limitations, we believe that the DD350 database currently is the best source of information about service expenditures.

### Base-Year Cost Calculation

Once the appropriate set of services is defined and a set of stable services is identified, the industry and product/service code data in the DD350 can be used to calculate the cost of those services in FY00, the base year. Table 2.1 summarizes Step 1 and our recommendations.

## STEP 2: MEASURING CHANGES IN SERVICE COSTS OVER TIME

The second step is to measure current-year costs for the services that were included in the baseline year in a consistent way so that a fair comparison can be made over time—a procedure that can be significantly more challenging than the base-year calculation. As discussed above, the exact nature of the services the Air Force purchases can

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[1] According to a May 1999 briefing documenting the findings of a study performed for the Assistant Deputy Under Secretary of Defense (Systems Acquisition), "All interviews indicate concern with the integrity of the DD350 database. . . . The current system is rigid and provides users a significant challenge in error correction." A summary of the study was found at http://www.acq.osd.mil/ar/pbareport/.

[2] A purchase card is like a charge card that can be used for government purchases. Purchase cards are meant to reduce the administrative burden of procurement, improving purchase lead-times and generating financial savings. The use of purchase cards is generally recommended for commercially available goods and services less than $2,500. For more information, see, for example, U.S. Air Force (December 2000).

**Table 2.1**

**Recommendations for Step 1**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 1. Establish FY00 cost savings baseline for procurement of services. | DD350 | A. Clearly define the universe of services governed by the Act; choose a set of services for which PBSA and other management innovations are appropriate.<br>B. Sum FY00 expenditures for chosen services. |

change from year to year—through changes in scope, quantity, and quality. Understanding and controlling for these factors is necessary to isolate the effects of new management practices on costs.

## Scope

The scope, or range, of types of services purchased can change over time for several reasons. The Air Force may now have contracts for services that were not being purchased in the base year, perhaps because services were outsourced between the base year and current year or because of new service requirements (i.e., the services were not performed at all in the base year). Expenditures on services supporting new overseas operations or support for new weapons, munitions, and other new systems are good examples of new service requirements. The DD350 database has information on the place of performance for services so that new locations can be identified. Another code designates weapon systems for which services are provided (when applicable). Services to support a new mission constitute a third category of new service requirements, but one that may not be as easily identified.

Alternatively, the Air Force may no longer be purchasing some types of services because requirements went away (e.g., a weapon system was retired, an installation was closed) or the services are now being performed by Air Force personnel rather than contractors.

Our recommendation is that services purchased in the current year that were not purchased during the baseline year be excluded from

the measurement of current-year costs, because there will be no basis for comparison. Similarly, because previously performed services that are no longer purchased will not be included in current-year costs, the baseline should be adjusted to remove the costs of those services. If it is preferred to hold the baseline savings constant, an equivalent treatment would be to estimate the current-year cost of those services as if they were still purchased, adjusting them by the savings rate achieved by all of the other included services to avoid biasing the results. (An exception to this treatment could arise if the service is no longer needed as a result of the types of innovations that the Act is encouraging. If such a determination can be positively made, then the service cost should remain in the baseline and left out of the current-year calculation to give credit for the cost reduction.)

Even if there are no changes in the scope of services purchased, the nature of the performance of those services may have changed in some other way, perhaps because services are now consumed in different quantity or supplied with different quality. We turn to changes in quantity next.

## Quantity

The cost of a given service can be thought of as the product of the quantity of the service purchased and the price per "unit" of the service, so costs can be reduced either by receiving a better price or by reducing the quantity purchased (holding quality constant). Because we want to capture savings from management improvements and not merely record decreased costs resulting from smaller quantities purchased, we must control for quantity in the current-year calculation. Unfortunately, service quantities are harder to determine than those for goods.

To the extent possible, quantity should be measured in terms of the end product serviced, such as the number of personnel supported, square feet of buildings maintained, number of aircraft components repaired, or number of flight hours supported. These data are available through the Automatic Budget Interactive Data Environment System (ABIDES), which is discussed in detail later in the chapter. Adjustments should then be made to the current-year calculation to

scale the cost of these services to the appropriate base-year quantity of end products serviced.

Even when service products do not change, there can be changes in underlying factors that should preferably be taken into account. For example, the facilities and grounds associated with an installation may not change over time, but base occupancy can increase or decrease and missions can change, which may affect installation support costs. Such factors, to the extent that they are readily quantifiable (such as the number of base personnel), should also be used to adjust the current-year cost. Others will likely be too difficult to calculate. For example, flight hours may not change over time, but the nature of the flying hours and fleet ages can change, leading to changes in aircraft maintenance costs.[3] Such changes, although they would ideally be controlled for, may have to be ignored in practice if data are unavailable at that level of detail.

Other services do not result in outcomes that can be easily defined and compared in a consistent manner over time. For instance, the Air Force has ongoing needs for engineering support services to address problems with developing and sustaining weapon systems and for advisory and assistance services (A&AS) to support program office and product directorate decisions about weapon systems (Ausink et al., 2002). Individual activities within these types of services can vary a great deal in terms of complexity and end products, leading to challenges in comparing the quantities of these services purchased from year to year.

Measuring service inputs such as labor hours may seem like a good way to control for some of these challenges. For example, increases in the average repair time for a particular component can be an indication that more extensive repairs are now needed. Measuring labor hours for engineering support may provide a method of identifying comparable types and complexities of different services. However, the management efficiencies that the Air Force is trying to capture in the cost comparison are intended to lead to reductions in inputs. Performance-based statements of work (with fewer mandatory instructions or military specifications for the work) may spur providers

[3]The duration of sorties and types of maneuvers flown affect operations and support costs.

to find better, more efficient ways to operate. Incentives may lead providers to invest in better equipment that results in faster completion times. In these cases, we want to capture, rather than control for, these input changes.

Because differentiating between input reductions due to requirement changes or improved management is so difficult, our recommendation is to control for changes in quantity to the extent that the changes can be quantified through measurements of end products. If service quantity is increasing but the increase cannot be controlled for, that will bias the savings calculations downward. Conversely, if quantity is decreasing but the decrease is not taken into account, the savings estimates will be too large.

One way to capture these quantity changes empirically is to link service costs to them statistically. Assume that current spending on a service is a function of the previous year's spending and other demand influences for the service; that is

$$CS_t = f(CS_{t-1}, \text{demand variables})$$

where $CS_t$ is the spending on contract services in year $t$ and the "demand variables" represent an assortment of demand-related items such as the fleet size, the number of personnel on active duty, or the tempo of flight operations being supported. Historical data could be used to estimate this model and assess its accuracy. Spending could then be scaled in a consistent manner over time by adjusting spending to correspond to base-year fleet sizes, personnel totals, and the like.

In some instances, demand for certain services may fluctuate widely from year to year, and the cost model suggested above may not provide reliable estimates of spending. Costs from these unstable services may require separate treatment using savings estimates from these stable services; such treatment is described at the end of the chapter after the stable service savings estimates have been completed.

## Quality

Another benefit attributed to performance-based acquisition is the potential to get better quality service without significant changes in

cost. Therefore, we would also like to consider changes in the quality of service provision when calculating current-year costs.

In the case of goods such as television sets and washing machines, new models are often clear indicators of quality improvements. In creating the Consumer Price Index and the Producer Price Index, the Bureau of Labor Statistics (BLS) typically follows one of various procedures to quality-adjust the price of goods (U.S. Bureau of Labor Statistics, 1997). When explicit costs are available from producers, BLS takes into consideration the costs involved (and a normal profit margin) in producing a higher quality good and reports as a price increase only the amount in excess of that. If explicit costs are not available, BLS uses an overlap method, whereby all price changes are assumed to be quality-related. Costs for both the old good and the new and improved good are tracked over time, and one period is chosen as the overlap period for transition from the old good to the new. Thereafter, price changes for the new good are followed.[4]

However, these approaches may not be practical for services; it is much more difficult to identify quality of services in a consistent, systematic way. Consider the case where an installation changes its garbage collection service from once a week to twice a week at some additional cost. A "quantity" change could be difficult to distinguish from a "quality" change. If the switch to twice-a-week collections were clearly the result of an increase in population at the installation (and the resulting increase in the quantity of trash), we would treat this as a quantity change and adjust current-year costs for the number of personnel served. If the population remained constant, we would consider the change an increase in service quality. However, we can easily further complicate the interpretation of quality change. What if not all facilities are served by the second pick-up? Or what if each of the two pick-ups becomes limited in the number of receptacles serviced at each facility? How should the costs be handled then? Discerning service quality changes and their effect on costs poses significant tracking and data challenges.

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[4]In situations where technological changes mean that quality increases while prices decrease, BLS uses hedonic regressions (i.e., estimating the value of individual characteristics bundled together to form a product) to assign cost changes to product attributes. For example, hedonic prices for computers may depend on processor speed and memory size.

We believe the Air Force would best be served by assuming that quality of service in the current year and the base year are equal, so that none of the price change is related to quality. This approach will bias the estimates of cost-saving downward if quality is improving, or it will bias the estimates upward if quality is declining, but tracking service costs over time will be much more feasible without any quality adjustment. This recommendation and the others for Step 2 are summarized in Table 2.2.

### Data on Current-Year Costs

For base-year costs, the DD350 is currently the most detailed source of information on service expenditures. However, the Act requires reports on current-year expenditures and savings in March of each fiscal year, before complete information about expenditures are available. Thus, expenditures for the remaining portion of the fiscal year must be estimated. We discuss sources of data for estimates of service expenditures next.

**Table 2.2**

**Recommendations for Step 2**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 2. Estimate the amount that will be expended for procurement of services in the current FY. | DD350<br><br>ABIDES | A. Adjust for changes in scope.<br>B. Where possible, adjust for changes in the quantity of services purchased.<br>C. Assume that the quality remains constant instead of attempting to adjust prices for quality changes. |

## STEP 3: CALCULATING FOLLOWING-YEAR COSTS

The third step is to estimate the cost of purchased services in the following fiscal year. (For the final required report in 2006, the forecast is for 2011, five years into the future.) The approach described above is appropriate for future-year costs as well. However, this calculation is even more difficult because all of these costs must be estimated.

## Data on Future Expenditures

The reporting requirements and schedule described in the Act strongly suggest that any forecast of expenditures and savings should be linked to the Future Years Defense Program (FYDP), which we describe in the Appendix. In even years, estimates for the FYDP cover six years, so the 2006 FYDP would encompass fiscal years 2006–2011. We believe that the Act assumes that 2006 FYDP documents will describe appropriate management changes that will lead to achieving savings goals by FY11. The Air Force uses the ABIDES database to track resource plans associated with its part of the FYDP.

## Translating Planning Data into Service Cost Estimates

There are two methods for understanding service-level details for planned expenditures; however, both would need more work before implementation. One method would use codes already embedded within ABIDES to identify planned service expenditures. The other would go a step further to use a "translator" that links planned budget expenditures to specific service industries denoted in the DD350 data.

The ABIDES database allows a budget analyst to examine budget items by Element of Expense/Investment Code (EEIC). The codes are designed for use in budget preparations and accounting systems to identify the nature of services and items acquired for immediate consumption (expense) or capitalization (investment). Most codes are specific to Major Command (MAJCOM), but HQ USAF also issues some, and all EEICs are found in ABIDES.[5]

Some examples of three-digit account codes for EEICs denoting services are[6]

531 custodial services

[5]These codes are used in Air Force accounting only, but they are related to "element of resource codes" used by the Office of Management and Budget (OMB). See pp. 13–34 and p. B-16 of U.S. Air Force, *PPBS Reference Guide*.

[6]The EEIC is a five-digit alphanumeric code consisting of a three-digit account code followed by a two-digit subaccount code to provide a further breakdown. U.S. Air Force, *Guide to Program Analysis*, includes an appendix with EEICs listed. We were unable to find a reference for the two extra digits to ascertain what the digits might be or how they are organized.

533 civil engineering services

584 contractor engineering and technical services.

They may not be available to other branches of the military, but they could be useful for the Air Force.

Alternatively, the Office of the Secretary of Defense, Program Analysis and Evaluation (PA&E) and the Interindustry Forecasting group at the University of Maryland have created a tool called the Defense Employment and Purchase Projection System (DEPPS) that can translate planned defense expenditures from the FYDP into spending for 320 industries in constant prices. Most of these are manufacturing industries, but a number of service industries are represented as well, such as architectural and engineering services, research laboratories, management consulting, and computer and data processing services. This translation process is advantageous in that it is automatically performed by the DEPPS software and is less dependent on the whims of the data coder, but the industry-level detail is less than with the DD350 or the EEIC codes.

To ensure that a consistent set of service costs is being measured, the Air Force will need a way to "cross walk" between the DD350's PSC and NAICS descriptions of purchased services and the EEIC information found in ABIDES. The same services must be identified in both sets of data for the cost comparisons across time to be valid. Making such a link between the two data sets remains a challenge that will require further investigation. Tracking service costs is not an impossibility, but a new data collection effort or some additional detail in, or linkage between, the different existing data collection systems is needed. Table 2.3 summarizes our recommendations for Step 3.

## STEP 4: CALCULATING THAT WHICH "WOULD OTHERWISE BE EXPENDED"

The penultimate step toward meeting the requirements of the Act is to estimate "the total amount that *would otherwise be expended*"[7]

[7]Section 802(a)(2), emphasis added.

**Table 2.3**

**Recommendations for Step 3**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 3. Estimate the amount that will be expended for procurement of services in the following FY. | DD350<br><br>ABIDES | A. Establish a link between PSC/NAICS codes in DD350 and EEIC codes in ABIDES.<br>B. Use most current forecast for next fiscal year expenditures for chosen services, adjusted as described in Step 2. |

in a given fiscal year and the next. The Act provides no guidance about how this alternative cost should be calculated. We interpret the phrase to mean constructing an appropriate estimate of what would have been spent on the current-year services had PBSA and other management innovations not been implemented. The idea is to create a hypothetical cost where any cost difference is attributable to changes in the management of service procurement.

First, we need to account for how expenditures would typically behave with the passage of time. All else equal, prices usually increase over time in service industries as wages in the economy rise. Therefore, one way to construct the estimate of costs without management improvements is to adjust the baseline cost calculation to account for inflationary increases in subsequent years. However, the best way to adjust for inflation is not immediately clear. There are several options, and each has its positive aspects and drawbacks.

A gross domestic product (GDP) deflator could be used as one aggregate measure against which to adjust all service costs. Service activity will be captured in a GDP deflator, but so will manufacturing, retail and wholesale trade, and many other economic activities unrelated to service provision. Another inflation measure, the Producer Price Index, incorporates a few business service activities and does not include retail activities, but it is mostly based on commodity prices.

Some deflators are specifically formulated to apply to defense purchases. The Office of the Secretary of Defense (OSD) calculates defense expenditure-related inflation indexes based on guidance from

the Office of Management and Budget (see U.S. Air Force, 1994). These indexes are broken out according to budget category, including a category for operation and maintenance (O&M) that should be relevant for most of the services identified in the baseline. Since many O&M purchases are services rather than goods, this is a good option for calculations.

Alternatively, since much of the cost of services comes from wages, we could use an inflation measure that specifically targets changes in wages rather than changes in the prices of end products. The Bureau of Labor Statistics through its National Compensation Survey produces a national estimate of the average hourly earnings of service workers (the National Service Wage Index). The drawbacks to this approach are that wage inflation factors may vary considerably by industry and skill and this estimate ignores worker benefits. These complications could be set aside to preserve a simple treatment to the inflation problem. More detailed hourly wage data are also available for various industries and skills; however, this more accurate adjustment would come at the expense of much more complex calculations for the hypothetical estimate.

We recommend that the Air Force use either the OSD O&M price index or the BLS National Service Wage Index to adjust for inflation in service costs across years. Thus, the hypothetical cost without management improvements would be the base-year cost (adjusted for services relevant to the current year, as discussed above), inflated to current-year dollars (or next-year dollars) through the chosen index. See Table 2.4.

**Table 2.4**

**Recommendations for Step 4**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 4. Estimate the costs without management improvements for the current and following FYs (the amount that "otherwise would have been spent"). | DD350<br>OSD O&M price index<br>BLS National Service Wage Index | A. Adjust the base-year expenditures to current-year dollars through the chosen inflation index.<br>B. Do the same for the following FY. |

## STEP 5: DETERMINING IF THE SAVINGS GOAL HAS BEEN ACHIEVED

Once the base-year, current-year, and hypothetical costs without management improvements have been calculated, the savings can be calculated by subtracting realized costs from the hypothetical costs for the current and next year. Because the hypothetical costs have been calculated with inflation, the savings goal, if expressed in dollars, should also be adjusted for inflation. If the savings goal is expressed as a percentage of the base-year expenditure, then the savings achieved should be calculated as a percentage of costs without management improvements in the current or following year (whichever is applicable).

### An Illustrative Example of Savings Calculations

Assume that Base X spent $100M for 100 units of Service A and $100M for 100 units of Service B in the base year, for a total of $200M (Step 1). As a result of a mission change, the base also needs 20 units of Service C in the current year (along with 100 units each of A and B). Services A and C are purchased together because of efficiencies associated with providing the services together, representing a change in the contract scope. The two current-year contracts for these services include performance-based practices such as performance incentives; they total $200M in current-year dollars. Based on spending data, it is determined that $20M of the contract for Services A and C is associated with providing Service C. Therefore, adjusting for changes in contract scope, the current-year cost of Services A and B is $180M (Step 2). That expenditure is forecast to grow to $185M (then-year dollars) for the following year (Step 3).

To complete the example, assume that the BLS National Service Wage Index increased by 4 percent between the base year and the current year, and is expected to rise 3 percent between the current year and the following year. Thus, the hypothetical expenditures without management improvements are $208M for the current year and $214.2M for the following year (Step 4).

We can then calculate the expected savings (Step 5) in Table 2.5 below.

**Table 2.5**

**Sample Savings Calculation**

| Calculation | Base year (2000) | Current year (2001) | Following year (2002) |
|---|---|---|---|
| Actual expenditures (then-year dollars) | $200M | $200M | |
| Adjusted expenditures (to hold scope constant) | $200M | $180M | $185M |
| Wage Index change | | +4% | +3% |
| Expenditures without management improvements | $200M | $208M | $214.1M |
| Savings | | $28M | $29.1M |

Table 2.5 shows that by 2002 a reduction of 13.6 percent (29.1/214.1) in expenditures on services will be achieved. Since the Act states that the goal is a 3 percent reduction, the goal has been exceeded in this example. See Table 2.6 for our recommendations.

**Table 2.6**

**Recommendations for Step 5**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 5. Estimate the amount of savings in the current FY and following FY that result from improved management practices to determine if goals have been met. | Steps 1–4 | A. Subtract expected expenditures for the current FY from the cost without management improvements for the current FY.<br>B. Do the same for the following FY.<br>C. Compare with the savings goals for those years. |

## IMPROVING SAVINGS MEASUREMENT ACCURACY BY CAPTURING CHANGES IN THE COST OF UNSTABLE SERVICES

The preceding steps have been predicated on services for which demand is relatively stable and predictable over time, i.e., services that are consistently demanded over time and for which the nature of the

work is fairly similar over time. For example, installations need support services as long as they remain open. Heavy maintenance for an aircraft occurs on a regular basis as long as the aircraft remains in the inventory.[8]

Other services, such as special studies to solve unexpected aircraft safety problems, come and go over time, and the nature of the work changes depending on the Air Force's needs. In practice, some kinds of services may have widely varying levels of spending over time that cannot be captured reliably using the methods described for Step 2.

Simply assuming that the estimated savings for services with predictable spending applies to the entire set of services can be problematic. To the extent that characteristics of stable and unstable services affect realized savings differentially, the accuracy of the calculations will be challenged.

Table 2.7 illustrates how productivity savings estimates could be altered by the mix of stable and unstable services. Consider two types of services, high tech and low tech. Within each type, there are stable services and unstable services. Suppose that productivity savings for stable low-tech services are found to be 20 percent and productivity savings for stable high-tech services are estimated at 10 percent. Assume further that expenditures on high-tech and low-tech services are equal in the sample with stable demand, but high-tech services represent two-thirds of all purchased services. In the stable sample, the savings estimate would be 15 percent. Taking the unstable high-tech and low-tech services to behave the same way as the stable ones, though, would provide a 13.3 percent savings estimate for the whole sample.

Thus, extrapolation of savings estimates from stable services to the whole sample is only as good as the correlation factors between the stable and unstable services. Some kind of method is needed to apply information learned from the stable services to the unstable ones. One way to do this is to search for correlates and directly model the change in management-related productivity improvements among

[8]However, as discussed above, even these services can change from year to year, e.g., as base population changes or aircraft fleet age.

**Table 2.7**

**Illustrative Example of the Importance of Unstable Services for Productivity Savings Estimates (in percentages)**

| Service Type | Share of Stable Services | Productivity Savings | Share of All Services | Productivity Savings |
|---|---|---|---|---|
| High tech | 50 | 10 | 66 | 10 |
| Low tech | 50 | 20 | 33 | 20 |
| Total | | 15 | | 13.3 |

stable services. Productivity improvements, in the form of cost savings, would be modeled for stable services in the current year $PI_t$ as a function of the improvements in the prior year and a variety of contract and service characteristics. These characteristics would presumably be related to the way in which the service purchases are managed and hence the savings achieved.

$$PI_t = f(PI_{t-1}, \text{contract characteristics, services characteristics})$$

Relevant influences on these savings might include the contract size, contract type, the extent to which the service is labor intensive and capital intensive (vs. material intensive), whether the contract is performance-based, whether the service was procured at the base level (i.e., operational) or within Air Force Materiel Command (AFMC) (i.e., systems-related), or whether the services required professional or blue-collar labor. Historical data on stable services could be used to assess the accuracy of the method and to estimate relationships between contract and service characteristics for stable services. The productivity improvements for services that are not stable could be then estimated by applying the factors from the equation for stable services to the characteristics of the unstable services. Considering our hypothetical example above, if high-tech services form a larger part of unstable services than stable services, this method would appropriately adjust for that fact and would predict lower savings for those services.

Chapter Three

# SUMMARY AND CONCLUSIONS

The goal of this study was to investigate ways to measure changes in the cost of purchased services over time to meet the requirements of the National Defense Authorization Act of 2002. We found that such measurement first requires defining a clear universe of services. A successful service cost measurement methodology then needs to control for changes in the nature of services purchased over time and to estimate what those services would have cost in any given year in the absence of changes in contracting practices and management techniques. To satisfy the requirements of the Act, these measurements must not only be reported historically but also forecast up to five years into the future. Existing data sources offer a tradeoff between detailed accounting of past service purchases or a more general forecast of future purchases, but neither is sufficient for the entire task without further work or linkage.

Table 3.1 summarizes each element of the legislative requirement, the potential source(s) of data to meet the requirement, and recommendations for how best to implement each element among services with stable demand. Statistical analyses can be used to extrapolate savings estimates from stable services to those with less stable demand.

Pursuing a rigorous methodology to the cost savings measurement problem offers the advantage of more precise estimates. However, even with the attention to service scope, service quantity, and unstable demand, these estimates will not reflect changes in service quantity that cannot be captured through output-related measures, nor will they capture changes in service quality.

**Table 3.1**

**Summary of Recommendations**

| Steps to Estimate Service Cost Savings | Potential Data Source(s) | Implementation Recommendations |
|---|---|---|
| 1. Establish FY00 cost savings baseline for procurement of services | DD350 | A. Clearly define the universe of services governed by the Act; choose a set of services for which PBSA and other management innovations are appropriate.<br>B. Sum FY00 expenditures for chosen services. |
| 2. Estimate the amount that will be expended for procurement of services in the current FY | DD350<br><br>ABIDES | A. Adjust for changes in scope.<br>B. Where possible, adjust for changes in the quantity of services purchased.<br>C. Assume that the quality remains constant instead of attempting to adjust prices for quality changes. |
| 3. Estimate the amount that will be expended for procurement of services in the following FY[a] | ABIDES | A. Establish a link between PSC/NAICS codes in DD350 and EEIC codes in ABIDES.<br>B. Use most current forecast for next FY expenditures for chosen services, adjusted as described above. |
| 4. Establish the "hypothetical" expenditures for the current and following FYs (the amount that "otherwise would have been spent") | DD350<br>OSD O&M price index<br>BLS National Service Wage Index | A. Establish the hypothetical cost for the current year by adjusting the base year expenditures to current year dollars through the chosen inflation index.<br>B. Do the same for the following FY. |
| 5. Estimate the amount of savings in the current FY and following FY that result from improved management practices | | A. Subtract expected expenditures for the current FY from the hypothetical for the current FY.<br>B. Do the same for the following FY. |

[a] For the final report, the forecast is for five years into the future.

This research highlights a general need for improvements in Air Force data collection and processing to systematically track and analyze the effects of changes in purchasing practices on costs. Other RAND research is exploring the adequacy of the DD350 data to identify a stable set of services over time and other characteristics of the Air Force's service expenditures.

## POSTSCRIPT

In July 2002, we presented these findings and recommendations to the OSD Integrated Process Team in charge of coordinating a DoD-wide response to the reporting requirements of the Act. That group has assumed responsibility for relaying these findings to higher levels of management and Congress.

Appendix

# PLANNING DATA—THE PLANNING, PROGRAMMING, AND BUDGETING SYSTEM (PPBS)[1]

The Planning, Programming and Budgeting System has the potential to satisfy the Act's future-oriented reporting requirements. The key components of the PPBS process are discussed below.

The PPBS process produces the Department of Defense portion of the President's Budget. Its goal is to systematically allocate limited resources so that individual services and DoD as a whole can fulfill their roles and missions. The "programming" part of the PPBS is to balance fiscal constraints in the development of the budget and the planning horizon is a six-year period called the Future Years Defense Program (FYDP).

During the FYDP planning process, many changes can be made to resource allocations, and the DoD Office of the Comptroller (OUSD(C)) maintains the Force and Financial Plan (F&FP) database to keep track of them. The Air Force maintains a copy of the F&FP in its own system called the Automatic Budget Interactive Data Environment (ABIDES) database, which is maintained by the Assistant Secretary of the Air Force, Financial Management and Comptroller (SAF/FM).

The Program Objective Memorandum (POM) identifies a service's requirements for the FYDP. POM preparation is one of a series of

[1]Most of the details in this appendix are taken (either paraphrased or word for word) from U.S. Air Force (July 2000), U.S. Air Force (*PPBS Reference Guide*), and U.S. Air Force (*PPBS Course*).

exercises that occur over a two-year period and that require updates of information in the F&FP database:

- The POM itself is a "programmatic" exercise that develops long-range planning for force structure, manpower, and money. During this exercise, new cost estimates for current programs and the costs of new programs are examined. The POM "translates planning guidance into 'programs'," by aligning resources with specific requirements such as operations, training, maintenance, and base support (U.S. Air Force, 2002).
- The Budget Estimation Submission (BES) incorporates changes that result from a variety of reviews by senior management levels in the services. The BES "performs a detailed pricing on these 'programs' and fits the resources into the appropriate budget categories" (U.S. Air Force, 2002). The BES phase used to be conducted after the POM was completed. Since the FY03–07 POM (which was submitted in the fall of 2001), however, the POM and BES phases have been combined.[2]
- The President's Budget (PB) exercise: the budget is reviewed by the Office of Management and Budget and the OSD Comptroller, and changes are made at the direction of the Deputy Secretary of Defense.

In odd years, the POM and BES are revised; the Air Force calls these revisions the APOM (amended POM) and ABES (amended BES). Timelines for these exercises are illustrated in Figure A.1 (with the even year FY02 and odd year FY03 used as examples).

During the two-year PPBS cycle of exercises, MAJCOMs, Direct Reporting Units (DRUs), and Forward Operating Agencies (FOAs)[3]

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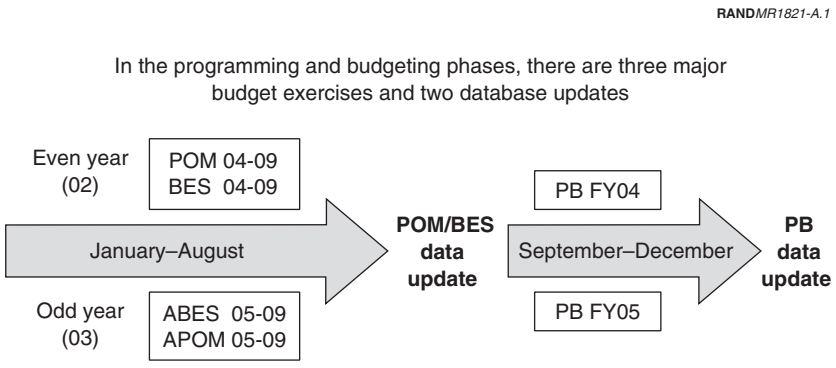
[2]The POM is sent to OSD for internal review by programmers; the BES is reviewed by the OSD Comptroller (Roberts, 2002).

[3]The information is aggregated by MAJCOMs before submission to Air Force Headquarters. For example, Chapter 64 of U.S. Air Force (*Financial Management Reference System*) describes how HQ AFMC consolidates data from all AFMC installations and then submits it to HQ Air Force financial management office, which organizes the data by appropriation. Further research would be needed to learn how much detail about services is lost in the process.




SOURCE: Adapted from U.S. Air Force (July 25, 2002), Block I, Slide 16.

**Figure A.1—POM Year Schedule**

submit numerous documents to justify new spending, explain budget shortfalls, and re-allocate funding.[4] The F&FP database (and, therefore, ABIDES) is updated four times during this cycle:

- September of even (odd) years reflecting the POM/BES (APOM/ABES) submission in preparation for the next President's Budget
- January of odd years to reflect the PB and January of even years to reflect the amended President's Budget.[5]

These updates mean that ABIDES contains data related to current and historical F&FPs that can be used for research and analysis. Historical files in the database track POM, BES, and PB program changes back to 1962, and Air Force budget analysts use this information to defend programs and to interpret program intent.[6] ABIDES is useful for the production of reports that can identify

[4]These are called "disconnects" (an approved program that is now unexecutable because of a shortage of funds), "initiatives" (a new program not yet approved), or "offsets" (funds moved from one program to pay for another). See the glossary in Appendix B of U.S. Air Force (*PPBS Reference Guide*).

[5]U.S. Air Force (2002), Block IV, Slide 5.

[6]U.S. Air Force (*PPBS Reference Guide*), page 11-1.

spending changes in real or nominal terms,[7] and for conducting "what-if?" exercises during the PPBS process that can explore the effects of different inflation assumptions on budget costs.[8] By definition of the FYDP, such exercises look six years into the future, the same time horizon required by the Act.

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[7]According to U.S. Air Force (*PPBS Reference Guide*).

[8]U.S. Air Force (*PPBS Reference Guide*), page 3-10, discusses inflation tables that are used in this analysis and points out that different inflation rates are used for different budget categories. It also (page 13-2) directs readers to websites that provide current information on inflation indices.

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